

Report by: Anand Prashar

NLP Homework 5 – q7

Q:

For each of the eight relation groups, print the 1-best, 5-best, and 10-best accuracy of your vectors on the group. The n-best accuracy is the percentage of items for which the correct answer was in the top n vectors returned. Use the approach from the sample code in Question 6 to complete the task. That is, given w_1, w_2, w_3, w_4 , calculate $w_1 - w_2 + w_4$, obtain the closest words, and compare them to w_3 .

On CrowdMark, in the space below, display the table generated by your q7.py program. Additionally, for each relation group, show an example of an incorrectly predicted analogy item, along with the correct answer.

Are there certain kinds of relations that seem to be predicted more accurately or less accurately by this method? Discuss your opinions and give a rationale for them.

A:

Below is the snapshot Q7.py (next page)

```
Console  PyUnit  Hierarchy View
<terminated> q7.py [C:\Anaconda\python.exe]

1 NEGATIVE EXAMPLE FROM EACH GROUP( Element3: Incorrect Prediction / Correct Value):

superlative      Predicted / Actual : bad : worst :: good/great : greatest
city-in-state    Predicted / Actual : houston : texas :: newark/seattle : washington
family           Predicted / Actual : boy : girl :: sons/brothers : sisters
adjective-to-adverb Predicted / Actual : complete : completely :: regular/most : mostly
currency         Predicted / Actual : brazil : real :: wins/korea : won
nationality-adjective Predicted / Actual : china : chinese :: language/england : english
capital          Predicted / Actual : baghdad : iraq :: queens/london : england
comparative      Predicted / Actual : bad : worse :: good/great : greater
PAST_TENSE       Predicted / Actual : pass : passed :: fly/run : ran
ABBR             Predicted / Actual : info : information :: brings/thx : thanks

GROUPS SORTED BY REASONING ACCURACY:
family           Accuracy: 0.705
PAST_TENSE       Accuracy: 0.667
comparative      Accuracy: 0.533
nationality-adjective Accuracy: 0.453
superlative      Accuracy: 0.429
city-in-state    Accuracy: 0.333
ABBR             Accuracy: 0.333
currency         Accuracy: 0.1
capital          Accuracy: 0.083
adjective-to-adverb Accuracy: 0.011

TOP_1  TOP_5  TOP_10
superlative      0.429  0.762  0.81
city-in-state    0.333  0.611  0.833
family           0.705  0.91   0.968
adjective-to-adverb 0.011  0.122  0.222
currency         0.1    0.1    0.1
nationality-adjective 0.453  0.744  0.872
capital          0.083  0.583  0.75
comparative      0.533  0.762  0.8
PAST_TENSE       0.667  0.667  0.667
ABBR             0.333  0.333  0.333
```

Explanation-

In First block, I am fulfilling the requirement of printing 1 wrong classification of each Relation/Group

In Second block, I am printing Groups in sorted order of their precision (== TOP_1)

It helps me see which Relations are predicted more accurately

In Third block, I am printing TOP_1, TOP_5, TOP_10 matrix as asked.

Please ignore relations: PAST_TENSE, ABBR (they were for q8 analysis appended by me)

Yes, certain relations seem be more accurately predicted than others. Looking at second chart of reasoning accuracy, we see 'family' has considerably high accuracy. My understanding would be there

are not as much vectors in this domain AND the vectors is a common noun too. It tends to be predicted more accurately. Similarly, 'Capital' category contains words which do not typically occur in same context causing defined observation of V1-V2+V4 to not be satisfactory.